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REVIEWS.

Coulter and Patterson's Practical Nature Study*

The writer once heard from T. C. Mendenhall the story of his first impulses to a scientific career; and that history has always remained with him as instructive and valuable because suggestive of what the elementary school may do for the progress of science. Mendenhall said that when he was a boy in a country school in Ohio, his teacher took pains to perform with her scholars simple experiments in natural philosophy for the purpose of arousing their curiosity, opening their eyes, and stimulating their minds. One of these experiments was to place a coin in the center of a basin, arrange the scholars around in such positions that the coin was concealed from every eye by the rim of the basin, and then to pour in water until, no one having moved in the least, the coin became visible to all. At another time the schoolroom was darkened, light was admitted through a small aperture, so that the camera obscura effect was obtained, and the images of children playing outside were thrown in their natural colors on the opposite wall of the room. These simple exhibitions powerfully stirred young Mendenhall's imagination. The result, as everyone knows, was a career of service in the advancement of science, the conduct of government surveys, and the administration of great educational institutions.

It is highly important that considerable numbers of people form the habit of finding out things for themselves, with respect to the processes of nature. As a custom of the race this is not an old habit, only about three hundred years old; yet its effects are those which most—at least most visibly—distinguish our age from every age that has gone before.

The school may assume a favorable relation to the growth of science considered as human endeavor. Boys and girls may be awakened by the contact with nature which we give them, as Mendenhall was awakened, and thus the numbers of those dealing with nature in an original way to the end of bringing its forces into our employ may be augmented.

* Coulter, John M., Coulter, John G., and Patterson, Alice J. *Practical Nature Study on an Agricultural Basis*. A manual for the use of teachers and normal students. Pp. ix + 350. 1909. Appleton & Co., New York. \$1.35.

On the contrary it is possible by means of highly organized scientific courses in schools to kill, to a very thorough deadness, interest in natural history and natural philosophy. The writer ventures to express the opinion, long entertained and now, through much inquiry among young men issued from the schools, become a conviction, that the type of school physics course at present in vogue often has this effect. The falling off in the election of physics by college students since the general adoption of an elaborate entrance requirement in physics is well known. As for botany, an experienced college examiner in this subject told the writer that candidates in botany could be grouped into three classes. The first passed with honors: they came from well-equipped schools where the subject was thoroughly *done*. The second group merely passed. The third got in. The college electives in botany, this professor continued, were manned from classes two and three, the most satisfactory students coming from the latter. Boys perfectly "prepared" never afterwards appeared upon the field.

Such considerations as the foregoing, and the possibility of the untoward effect suggested above, would seem to be enough to command attention among scientific leaders to the problem of school science even in the lowest grades. Unhappily there are some who have frowned upon the movement to keep alive in school children the "tentacles of inquiry". Regarding nature study as at best "the efflorescence of the sciences" they have bidden the grade teacher (salaried at \$400) come to the university for scientific training. They have neither inquired into conditions in order to organize instruction suited to the exigencies of the case, nor used their superior endowments of knowledge and advantage of prospective in coöperation with schoolmen seeking a betterment. But most happily there are some eminent examples of the leader of science alive to the opportunity for wide service. The activity of these men must eventuate not only in the enrichment and improvement of school curricula, but also, as has just been suggested, in an acceleration of the science process itself. The names of several eminent Americans instantly occur to everyone in this connection.

Lately Professor Coulter of Chicago has appeared as one of the authors of a work aimed directly at the solution of the nature study problem.

The work is styled "practical" and the basis is agricultural. The field is, therefore, that of the rural school, or at least of the schools of communities in which agricultural interests predominate. How far the outlines for school-room use and the specimen studies will apply beyond the limits of this field, cannot be foretold. But there is no doubt, whatever, that the *principles* enunciated are valid for every variety of local condition. The treatment is especially noteworthy and should have wide attention. The reviewer hopes that its influence may be extensive. Could these pages be broadly disseminated among teachers, supervisors, and superintendents the effect for good would be immediate and distinct; and the fog which so often envelops the subject would begin to dispel.

The book is in four parts: the first deals with the mission, the dangers, and the principles of nature study; the second contains a topical outline in nature study and typical lesson plans; the third is devoted to rural school outlines and subject matter for both biological and physical nature study; and in part four are found chapters on bird study, school gardens, general misconceptions, and evolution.

The second part represents the course as given in the Training School of the Illinois State Normal University. Though definite in character and designed to give specific aid to teachers who are called upon to handle the subject with little previous training, yet they are not indicative of any belief on the part of the authors that all nature study material should be so prescribed as to manner of treatment.

The authors think that the time has come for extensive experiment by trained teachers working in the light of certain evident principles. They insist that the teacher has the right to the last word.

The utilitarian trend of present-day education is reflected in the subjects of study from the first to the last grade—food, clothing, shelter, domestic animals, the plants of garden and

lawn, insect friends and enemies of man, thermometers, stoves, pumps, water systems, weather, soils, the selection, cultivation and marketing of corn, etc., etc. Wild nature, however, is not neglected. General principles of life and of inorganic nature are developed in such measure as the grade of advancement will allow. In the eighth grade the study becomes distinctly scientific in form on the side of plant study, for under the word "Botany" appears "observation of the gross anatomy of types of algae, fungi, liverworts, mosses, ferns, conifers, monocots, and dicots."

In the minds of these authors there is no confusion of nature sentiment, nature fancy, and nature study. The relation of literature to nature study, and of nature study to science and to agriculture are sanely and firmly grasped. Nature study is always to share the scientific spirit, in so far as science is a method of problem solving. Sentiment, the love of nature, which belongs of right to all healthy minded people, should be present as an atmosphere. But it alone is not nature study. Neither is nature study diluted botany, zoölogy, physics, etc. Poetry may be an aid; imaginative treatment is often a help when it does not substitute interest in fancy for interest in nature. But above all we must be clear to the fact that *truth itself when clearly discerned is very attractive.*

The intellectual results which the authors believe may be looked for are: A sustained interest in natural objects and the phenomena of nature; independence in observation and inference; some conception of what an exact statement means; some conception of what constitutes proof. Their hopefulness is born of experience with the children themselves. It is surprising and gratifying say they—and the reviewer's experience agrees—to see how rapidly young children learn to hold steadily to what they have seen and to state it without exaggeration or verbiage. "Whole systems of belief and lines of conduct have been constructed upon a basis of claimed fact which a child in the grades, trained in nature study, could he understand the terminology, would reject without hesitation. An injection of such children in large numbers into any metropolitan community would work a revolution."

The actual treatment of nature study materials is, as above stated, largely utilitarian — necessarily so, since nature study in this scheme leads to elementary agriculture — but the authors' ideal outcome for all the training given by the school through this medium is so broad and so fine that at once the whole system is raised above the merely industrial and acquisitive plane. In the light of this ideal, nature study becomes, let us dare to suggest, something better than an "efflorescence of the sciences" — as one eminent man of science phrased it to the present writer. The authors believe firmly in the attainability of this ideal; and with good reason, as experiments in some parts of the middle west are already beginning to demonstrate. Even those who have looked with some contempt upon the nature study movement will probably be able to discern in the following picture the delineation of a condition highly to be desired: "We do not want our country boys," say the authors, "to become merely efficient farmers who have learned to do certain things that they may make more dollars. We want them to be men who realize the larger applications of the laws and principles they are following, men who see and discriminate, who grasp situations, who think for themselves, and who have an abiding interest and enthusiasm for their profession, looking upon their fields, orchards, and meadows somewhat as laboratories in which to work out experiments to the end that they may do their work more profitably and enjoyably. We would have them men who take a keen pleasure not only in making their soil more productive, and in raising better crops and stock, but quite as much in making the home and its surroundings and the life within it more comfortable, more interesting, and more beautiful."

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PROCEEDINGS OF THE CLUB

APRIL 13, 1909

The Club met at the American Museum of Natural History at 8:30 P. M. and was called to order by Mr. Charles Louis